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(19)

(54) IMPROVEMENTS RELATING TO RECONSTITUTED-TOBACCO SMOKING MATERIALS

(71) We, BRITISH - AMERICAN TOBACCO COMPANY LIMITED, a Company incorporated under the laws of Great Britain, of Westminster House, 7 Millbank, London, S.W.1, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns improvements relating to reconstituted-tobacco smoking materials.

According to the invention, a smoking material comprises a tobacco component consisting of or comprising a combustible reconstituted tobacco of a type which consists solely or essentially of natural tobacco substances, which smoking material contains at least 1% by weight of a filler intimately incorporated therein and consisting solely or largely of carbon in particulate form. Advantageously, the filler is added to the tobacco component before it is made into web, sheet or filaments and so that the filler becomes incorporated within the fibrous structure of the reconstituted tobacco.

Preferably the proportion of filler included should amount to at least 5% by weight of the smoking material. Up to 50% of filler may be included, but the upper limit in practice will depend upon the nature of the product, particularly its mechanical strength. Carbon should not be present in such a large proportion as to weaken excessively the shreds or filaments of the smoking material as used. The particle size of the carbon is preferably less than 150 microns.

Reconstituted tobaccos of the aforesaid type to be used are characterised essentially by the absence of extraneous adhesives, binding being achieved by substances of, or released from, natural tobacco. Such reconstituted tobaccos are also to be distinguised from those in which the originating material is pulped chemically, using nitric acid or caustic soda for example.

Reconstituted tobacco may be made without non-tobacco adhesive by several known methods:

(1) For example, as described in U.S. Patent Specification No. 3,043,723, reconstituted tobacco may be produced by disintegrating hot-water-extracted tobacco parts, mixing the extracted tobacco parts as binder with tobacco fines such as lamina or midribs, reducing the particles size of the mixture and casting a sheet on a solid band, for example of stainless steel, and evaporating the water.

In this case, carbon in fine granular form can be added together with the tobacco fines to the binder prepared from the water-extracted tobacco parts.

(2) Filamentary reconstituted tobacco may be produced by extruding a mixture of water and tobacco parts comminuted to powder form, as described in our United Kingdom Patent Specification No. 983,928.

The carbon can be added to the comminuted tobacco prior to the addition of the water and subsequent extrusion.

(3) According to another method, reconstituted tobacco may be produced by laying a web of fibres, obtained by pulping tobacco material, on a Fourdrinier machine. The web may or may not be impregnated with concentrated aqueous tobacco extract.

The carbon can be added to the stock supplied to the machine.

The present invention can be applied with advantage to reconstituted tobacco of any of these kinds.

Examples of ways of carrying the invention into effect will now be more fully described:

Example 1 (Method 1 above).

Reconstituted tobacco was produced in the following manner:

Binder was obtained by cooking 200 lbs of threshed Burley stem in 200 gallons of water for one hour under a pressure of 30 lbs per square inch, this being followed by washing with hot water. The solubles were rejected and

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the residue was hammer milled in a Rietz mill (One pass, 0.063 inch screen and two passes, 0.027 inch) at a consistency of 3%. Finally the resultant stock was homogenised by six passes under a pressure of 2,000 pounds per square inch at a consistency of 2.14%.

A tobacco flour was produced from a blend of factory shorts from blended cigarette manufacture by milling to a size of 100% less than 150 microns. This flour (with 8.3% moisture content) was mixed with the binder (with 2.14% solids) in a proportion of 3:1 dry weight, in one case without the addition of carbon and in other cases with 3.5% and 7% (based on the total dry weight) respectively of activated carbon of a particle size less than 150 microns, plus 5% (with reference to the flour, or flour and carbon) of glycerol as humectant. The mixing was performed in a high-speed mixer at 90°C for ten minutes. The three resultant slurries were cast as sheets and dried on a stainless-steel band.

Each sheet was cut and made into cigarettes of 80 mm length and 25 mm circumference provided with 15 mm long cellulose-acetate filters and weighing 1095 ± 20 mg. The cigarettes were smoked in a conventional machine at 1 puff per minute of 35 ml volume and 2 seconds duration. Analysis of the smokes delivered gave the following results:

Carbon Content %	Total Particulate Matter in Smoke		Total Nicotine Alkaloids in Smoke	
	mg per cigarette	Reduction %	mg per cigarette	Reduction %
0	24.0	—	1.4	—
3.5	22.6	6	1.2	14
7.0	18.2	24	0.98	30

The reductions are larger than would be expected from the dilution represented by the contents of filler.

Example 2 (Method 2).

Carbon was added in proportions of 10 and 20% to a reconstituted tobacco produced as described in the aforesaid Specification No. 983,928, sometimes known as Batex, in which ground tobacco is extruded under high pressure to form coherent filaments similar to cut tobacco in cross section. Cigarettes were prepared from 50/50 mixtures of the reconstituted tobacco and a flue-cured tobacco blend and were smoked in substantially the manner described above with the following results:

Carbon Content in Reconstituted Tobacco %	Total Particulate Matter in Smoke	
	mg per Cigarette	Reduction %
0	32.7	—
10	25.6	21.7
20	22.7	30.6

The reductions are larger than would be expected form the dilution represented by the contents of filler.

Example 3 (Method 3).

Threshed Burley stem was cooked at 90—95°C for three thirty-minute periods, with a

stem/water ratio of 1 to 10 by weight, followed by draining after each cook. The fibrous residue was then passed through a disc mill at 16.5% consistency, the clearance between plates being 0.035 inches, this being followed by beating in a conventional Valley beater for 20 minutes at 2% consistency.

The resultant stock was diluted to 0.6% consistency and fed together with finely divided activated carbon, of which 100% was of a size less than 150 microns, to the headbox of a conventional Fourdrinier paper-making machine of the tissue-paper type. A continuous sheet with a final thickness of 0.13 to 0.23 mm was produced. Because of the low retention of carbon, in relation to fibres, on the Fourdrinier wire, the ratio of carbon to fibres fed to the headbox will generally be two to three times the ratio required in the final sheet material.

Two series of samples of reconstituted tobacco thus prepared were used for tests. In a first series, A, the sheet material was impregnated with concentrated aqueous tobacco solubles extracted in the cooking stages, In a second series, B, the solubles comprised only residual solubles remaining in the fibre. For the impregnation, the extract obtained as aforesaid was concentrated in a climbing-film evaporator to a solids concentration of 29%.

The sheet was shredded to a form smokable in cigarettes and cigarettes prepared from the shreds were smoked on a conventional machine as described above.

Analysis of the smoke for a variety of compositions of the reconstituted tobacco gave the following results for the total particulate matter in the smoke:

Series	Composition (%)			Total Particulate Matter	
	Fibre	Filler	Tobacco Solubles	mg per Cigarette	% Reduction
A	48.1	nil	51.9	11.6	—
	37.1	9.6	53.3	8.0	31.0
	29.6	17.4	53.0	4.7	59.5
	24.5	22.8	52.7	3.1	73.3
	20.5	27.7	51.8	1.9	83.6
B	90.1	nil	9.9	31.2	—
	83.4	7.9	8.7	17.5	43.9
	72.9	18.9	8.2	9.6	69.2
	58.2	34.1	7.7	6.5	79.2
	48.2	44.7	7.1	2.9	90.7
	39.8	53.9	6.3	0.9	97.1

The reductions are again larger than would be expected simply from the dilution.

The smoke from cigarettes produced as described above was found to be agreeable.

WHAT WE CLAIM IS:—

1. A smoking material comprising a tobacco component consisting of or comprising a combustible reconstituted tobacco of a type which consists solely or essentially of natural tobacco substances, which smoking material contains at least 1% by weight of a filler intimately incorporated therein and consisting solely or largely of carbon in particulate form.

2. A smoking material according to claim 1, wherein the proportion of filler is between 5 and 50% of the smoking material by weight.

3. A smoking material according to claim 1 or 2, wherein the particle-size of the carbon is less than 150 microns.

4. A smoking material according to any one of claims 1 to 3, wherein the reconstituted

tobacco is of the kind produced as a cast mixture and the filler is an addition made to the mixture prior to its casting.

5. A smoking material according to any one of claims 1 to 3, wherein the reconstituted tobacco is of the kind in which an aqueous tobacco slurry is formed into a continuous web on a Fourdrinier-type paper-making machine and the filler is fed together with the slurry to the headstock of the said machine.

6. A smoking material according to any one of claims 1 to 3, wherein the reconstituted tobacco is of the kind in which ground tobacco is extruded to form filaments, the filler being included prior to the said extrusion.

7. A smoking material according to any one of claims 1 to 3, wherein the reconstituted tobacco is of the kind in which an aqueous tobacco slurry is formed into a sheet and dried upon a metal band, the filler being included prior to the said forming.

8. A smoking material according to any one of claims 1 to 7, wherein the reconstituted tobacco contains added tobacco extract as well as tobacco solids.

9. A smoking material substantially as hereinbefore described.

10. Cigarettes containing a smoking material as claimed in any one of the preceding claims.

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